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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-31 (canceled).

32. (currently amended) An image processing method for converting an input color signal, being input to an image output apparatus, into a color material signal, the image processing method comprising the steps of:

defining a first line including a starting point and a first end point as end points of the first line;

defining one or more second lines, each second line including said starting point and a corresponding second end point as end points of the second line;

defining one or more third lines, each third line including said starting point and a third end point as end points of the third line;

determining one or more color material signals on the first, second, and third lines;

if said input color signal is not substantially within a color range of memory color,
defining a plurality of tetrahedrons, each being formed by connecting said first line, a corresponding one of said plurality of second lines, an additional line connecting said first and second end points, and additional lines connecting an additional point with said starting point, with said first end point and with the second end point of the corresponding second line, respectively, identifying one of said tetrahedrons having the input color signal situated therein and obtaining said color material signal by performing interpolation on the identified

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~~tetrahedron, if said input color signal is not substantially within a color range of memory color;~~
and

if said input color signal is substantially within said color range of memory color,
defining a tetrahedron formed by said first line, one of said second lines, one of said third lines,
and other lines connecting the third end point of the one of the third lines with the second end
point of the one of the second lines, and connecting the first end point with the third end point of
the one of the third lines and with the second end point of the one of the second lines,
respectively, obtaining said color material signal by interpolation according to the first, second,
and third lines forming said tetrahedron, ~~if said input color signal is substantially within said~~
~~color range of memory color,~~

wherein the first line is an achromatic line in a reproducible color range of the image
output apparatus, the one of the second lines is a line situated on an outermost boundary line of
the reproducible color range, and the one of the third lines is a line situated within the
reproducible color range of the image output apparatus;

wherein the color range of memory color includes human skin color, ocean blue color,
sky blue color, and plant green color.

Claims 33-36 (canceled).

37. (previously presented) The image processing method as claimed in claim 32,
wherein the one or more color material signals on the first, second, and third lines are one or
more signals of same color having different density.

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38. (previously presented) The image processing method as claimed in claim 32, wherein the one or more color material signals on the first, second, and third lines are one or more signals of black.

39. (previously presented) The image processing method as claimed in claim 38, wherein the one or more color material signals of black on the one or more third lines are utilized to determine a maximum amount of black for a signal situated between the first line and the one or more third lines.

40. (previously presented) The image processing method as claimed in claim 38, wherein the one or more color material signals of black on the one or more second lines are utilized to determine a maximum amount of black for the one or more color materials of black and obtain a maximum range for the reproducible color range.

41. (previously presented) The image processing method as claimed in claim 38, wherein the one or more color material signals of black are determined to be black starting points at which graininess is unnoticeable.

42. (previously presented) The image processing method as claimed in claim 32, wherein the one or more color material signals are determined according to a designation of a user.

43. (original) The image processing method as claimed in claim 32, wherein the one or

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more third lines are controlled according to a characteristic of an input image.

44. (original) The image processing method as claimed in claim 32, further comprising a step of creating a table indicative of the obtained color material signal corresponding to the input color signal.

45. (original) An image processing apparatus comprising:

a CPU,

wherein the CPU converts an input color signal into a color material signal by referring to the table as set forth in claim 44.

46. (currently amended) An image processing method for converting an input color signal, being input to an image output apparatus, into a color material signal, the image processing method comprising the steps of:

defining a first line including a starting point and a first end point as end points of the first line;

defining one or more second lines, each second line including said starting point and a corresponding second end point as end points of the second line;

defining one or more third lines, each third line including said starting point and a third end point as end points of the third line;

determining one or more color material signals on the first, second, and third lines; and

if said input color signal is not substantially within a color range of memory color,

defining a plurality of tetrahedrons, each being formed by connecting said first line, a

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corresponding one of said plurality of second lines, an additional line connecting said first and second end points, and additional lines connecting an additional point with said starting point, with said first end point and with the second end point of the corresponding second line, respectively, identifying one of said tetrahedrons having the input color signal situated therein and obtaining said color material signal by performing interpolation on the identified tetrahedron, ~~if said input color signal is not substantially within a color range of memory color;~~ and

if said input color signal is substantially within said color range of memory color, defining a tetrahedron formed by said first line, one of said second lines, one of said third lines, and other lines connecting the third end point of the one of the third lines with the second end point of the one of the second lines, and connecting the first end point with the third end point of the one of the third lines and with the second end point of the one of the second lines, respectively, obtaining said color material signal by interpolation according to the first, second, and third lines forming said tetrahedron, ~~if said input color signal is substantially within said color range of memory color,~~

wherein the color range of memory color includes human skin color, ocean blue color, sky blue color, and plant green color.

47. (previously presented) The image processing method as claimed in claim 48, wherein the one or more color material signals of black are determined to be black starting points at which graininess is unnoticeable.

48. (previously presented) The image processing method as claimed in claim 46,

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wherein the one or more color material signals on the first, second, and third lines are one or more signals of black.

49. (previously presented) The image processing method as claimed in claim 48, wherein the one or more color material signals of black on the one or more third lines are utilized to determine a maximum amount of black for a black signal situated between the first line and the one or more third lines.

50. (previously presented) The image processing method as claimed in claim 48, wherein the one or more color material signals of black on the one or more second lines are utilized to determine a maximum amount of black for the one or more color materials of black and obtain a maximum range for the reproducible color range.

51. (previously presented) The image processing method as claimed in claim 46, wherein the one or more color material signals are determined according to a designation of a user.

52. (previously presented) The image processing method as claimed in claim 46, wherein the one or more third lines are controlled according to a characteristic of an input image.

53. (previously presented) The image processing method as claimed in claim 46, further comprising a step of creating a table indicative of the obtained color material signal corresponding to the input color signal.

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54. (previously presented) An image processing apparatus comprising:

a CPU,

wherein the CPU converts an input color signal into a color material signal by referring to the table as set forth in claim 52.

55. (previously presented) The image processing method as claimed in claim 46, wherein the first line extends between white and black, the one of the second lines extends between black and a primary color and/or a secondary color, and the one of the third lines connects black with one or more points situated between white and a primary color or a secondary color.

56. (previously presented) The image processing method as claimed in claim 46, wherein an amount of black for each point on the first, second and third lines is determined according to a distance from black.

57. (previously presented) The image processing method as claimed in claim 46, wherein a black starting point for the third line starts later compared to black starting points for the other lines.

58. (previously presented) The image processing method as claimed in claim 32, wherein the first line extends between white and black, the one of the second lines extends between black and a primary color and/or a secondary color, and the one of the third lines passes

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through the color range for memory color.

59. (previously presented) The image processing method as claimed in claim 32, wherein the first line extends between white and black, the one of the second lines extends between black and a primary color and/or a secondary colors, and the one of the third lines connects black with one or more points situated between white and a primary color or a secondary color.

60. (previously presented) The image processing method as claimed in claim 32, wherein the amount of black for each point on the first, second and third lines is determined according to a distance from black.

61. (previously presented) The image processing method as claimed in claim 32, wherein a black starting point for the third line starts later compared to black starting points for the other lines.